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ABSTRACT

The philosophy known as Total Quality Management (TQM) is frequently presented as a way to change and improve public education. This issue of "Focus in Change" examines Deming's original 14 TQM points and their application to education. Myron Tribus lays out the core philosophy of the movement and discusses its possible application to schools, stating that the four components of a quality education are knowledge, know-how, wisdom, and character. To gain a sense of how schoolwide implementation might occur, David Langford describes the process of using TQM to transform working conditions and student achievement and attitudes toward learning at Mt. Edgecumbe High School in Sitka (Alaska). Theresa M. Hicks, a second-grade teacher from Denver Place Elementary School in Wilmington (Ohio), believes she has found the route to dramatically improved teaching and learning through TQM, although she is the sole TQM proponent in her school and district. Suggestions for additional readings on TQM are given. Commentary by Richard A. Rossmiller concludes the issue. (MLF)

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FOCUS IN CHANGE

THE NATIONAL CENTER FOR EFFECTIVE SCHOOLS RESEARCH & DEVELOPMENT FALL 1992 NO.8

Total Quality Management

A movement that is becoming widely known, increasingly controversial, and frequently presented as the answer to the woes of public schools is the philosophy known as Total Quality Management (TQM). What is it, first of all, and does it have the potential to change and improve public education?

The quality movement stems primarily from the work of an American physicist and statistician, W. Edwards Deming, who worked with post-World War II Japanese industrial leaders to boost Japan's crumbled economy, teaching them the principles of quality management. We see the result today, as the names of Japanese products have become synonomous with quality and a remarkably high degree of customer satisfaction.

At its most basic, Total Quality Management is an approach to organizations that requires conceptualizing the organization and the roles of its employees differently than American businesses and schools have been structured in the past. Deming and his followers do not believe in competition, rankings, performance evaluations, merit pay, or a hierarchical structure that pits top management against workers. Rather, they believe that a team approach that fosters plenty of employee input, a foundation of customer satisfaction, and the careful use of statistical tools and techniques to provide data for decision-making will result in a quality product and a high degree of employee satisfaction with worklife conditions.

The TQM process is complicated; it is more a philosophy than a blueprint for action. Some vocabulary can be difficult to understand, since its genesis lies in business and the sciences. And TQM's philosophy can be elusive and hard to grasp.

In addition, the statistical component of TQM is key, but is by no means the only factor that affects success. Finding the limits of variation of quality is central to the movement, since TQM proponents believe that learning those limits will tell them where intervention is needed to improve a product.

In this issue of *Focus in Change*, we examine TQM's application to education. We ask: How might TQM work in schools? Can the application of TQM principles be successful in a single classroom if the entire school or district does not participate? How should quality in education be defined? How can school staff measure variations in quality?

To find answers to these and other questions, we talked to some leaders in the TQM movement. Myron Tribus lays out the core philosophy of the movement and discusses its possible application to schools. His credentials are impressive: He is a former Assistant Secretary of Commerce, former Director of the Center for Advanced Engineering Study at MIT, a former senior vice president at the Xerox Corporation, and a colleague of W. Edwards Deming. Devoted to the improvement of education, Tribus makes a compelling case for the application of TQM to schooling.

To gain a sense of how schoolwide implementation might occur, we hear from David Langford, who became convinced that TQM would transform both working conditions and student achievement and attitudes toward learning at Mt. Edgecumbe High School in Sitka, Alaska. Langford, who now heads his own consulting firm, discusses the process as it occurred at Mt. Edgecumbe, and reveals what he would do differently now, given his experience.

Finally, we are allowed an intimate glimpse into a second grade classroom as we talk to Theresa M. Hicks from Denver Place Elementary School in Wilmington, Ohio. As she explains, Hicks was troubled by conventional approaches to education and believes she has found the route to dramatically improved teaching and learning through the work of Deming and the quality movement—although she is the sole TQM proponent in her school and district.

In TQM terms, you—whether you are a school administrator, curriculum coordinator, teacher, or member of the educational research community—are the customer and ultimately will decide whether the TQM process contains enough answers to unravel the puzzle of school reform. We would like to hear your opinions, and invite you to write us at the National Center for Effective Schools.

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"We're trying to create autonomous learners..."

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What Do We Do To Improve?

ANNE TURNBAUGH LOCKWOOD

Myron Tribus, a colleague of W. Edwards Deming, divides his time between Exergy Corporation, a company which is introducing a new approach to electric power generation, and his work as a consultant in quality management. Deeply interested in the application of quality management principles to schooling, Tribus has held positions in both the private and public sectors, including Dean of the School of Engineering at Dartmouth College, Director of the Center for Advanced Engineering Study at MIT, and senior vice president in the Xerox Corporation. He also served as Assistant Secretary for Science and Technology in the US Department of Commerce.

The most compelling way for Myron Tribus to communicate what he means by an education of quality is to tell a story from his personal experience. "When I was Dean of Engineering at Dartmouth," he begins, "we truly revolutionized what we were doing by making student projects central to every class. Here is one thing we did—although we had many different ideas.

"I took a group of sixty sophomore men to a camp in New Hampshire where they had disabled children, thalidomide victims, in those days polio victims, blind children—if there's an affliction, there's a kid there with it.

"I took these sophomores to visit the kids, brought them back and said, 'In ten weeks you've got to come up with some technique or device or gadget that makes it easier for the doctors and nurses to do therapy with the youngsters. We'll solve a problem for these people.'"

The results of the assignment, Tribus claims, were staggering. "These kids worked all night. I had professors of religion visit me to ask what it was that made our students so eager to help somebody else."

The key, to him, is simple. "If you take young people and present them with children such as the ones at the camp and tell them their job is to help, they are motivated."

The results were impressive. "They came up with all kinds of wonderful gadgets. One boy could not use his limbs, and they fixed up an electric typewriter, where the letters flashed on the screen in front of him and by blinking an eyelid he could choose a letter."

Tribus notes that the educational philosophy that permeated the program—similar to the philosophy espoused by the movement known as Total Quality Management—was that teachers must create an environment in which students want to learn, one where they will play an active rather than passive role.

"As the teacher, you have to help students to learn, and you have to teach them how to improve their learning process," Tribus says. "That makes the student co-manager of his or her education."

Tribus's conviction that the principles of Total Quality Management can—and should—be applied to schools is compelling, even to a skeptic. As he explains the philosophy that underpins what he prefers to call "the quality movement," he draws distinctions between industrial and educational applications of TQM's key concepts, and laces his translation of the TQM philosophy with forthright comments that reveal his humanistic, yet hands-on approach to schooling.

How does he define quality? "Quality in the business setting," Tribus replies, "is what makes it possible for your customer to have a love affair with your product or service.

"It is possible," he adds, "to produce a temporary infatuation by telling little lies about the product or service, by lowering the price or by adding clever little features, but these will not last, because it takes quality experiences to sustain devotion."

But how do words like "product," "service," and "customer" translate into an educational setting? Tribus places his definition of quality squarely on the shoulders of the learning process.

"Quality in education is what makes learning a pleasure and a joy," he responds. "Some measures of student performance may be increased by threats, by competitions for grades or prizes, but the attachment to learning will be unhealthy."

He adds, "It takes a quality experience to create an independent learner."

He emphasizes that the purpose that drives the quest for quality is crucial. "We're trying to create autonomous learners, people who are learning because they want to, because they are motivated to learn. That motivation comes from the satisfaction they get from a job well done."

This means that autonomous learners will be motivated to seek quality for themselves, and seek it relentlessly, Tribus says, and he believes that a high degree of self-esteem and confidence will also result. "When students finally decide that they're satisfied themselves, then they can face the world."

Components of a Quality Education

What does a quality education comprise? Tribus believes it must encompass four dimensions, which he lists as "knowledge, know-how, wisdom, and character."

He explains each in turn. "Knowledge enables us to understand what we learn and how to connect it to other things we learn. It provides us with the ability to generalize from

our experiences. With knowledge, we can accumulate thirty years of experience instead of one year repeated thirty times."

Know-how, he observes, is hands-on and applied. "It enables us to put knowledge to work and requires the integration of knowledge from many sources. While knowledge may be gained from reading, listening, and discussing, know-how can be acquired only by doing."

He defines wisdom as "the ability to decide what is important and what is not. Wisdom allows us to set priorities for ourselves and helps us to decide what is worth worrying about."

He continues, "Character is a combination of knowledge, know-how, and wisdom, coupled with motivation."

It is crucial to remember that the education that students receive, not students themselves, is the product. Tribus explains, "In a classroom, the students are the customers of the teacher. Together they define what makes a quality experience. Teachers are the customers of the administrators, and administrators are the customers of the school board.

"Customers for the education that students will receive are the students themselves, their parents, their future employers, and society at large." He adds, "The employer wants to use the student's education, abilities, knowledge, know-how, wisdom, and competence. The student wants to rent out his education to somebody. Parents want a good education because they paid for it. And finally, the country at large would like to have kids well-educated so the country can better function. Every one of us lives surrounded by other people, so we want everyone to be educated, responsible, and of good character so that we can survive. We, society at large, are customers of that education.

"If we are the *supplier* of the education, we have to make sure that we find out what all those people are looking for, and then decide what to do about it. Fortunately, they're not that much at variance."

How TQM Stands Apart

Tribus believes that TQM differs from other approaches currently used in schools because of three distinguishing characteristics. "TQM is holistic," he points out. "It deals not only with the classroom but the management of the school and the roles of all the players. Another unique feature is the insistence on quality, that is, defining excellence in everything you do. And the third element is understanding the role of statistical variation.

"We're saying that we have to teach people the tools and techniques of quality management, but we can't talk about the techniques without talking about the social system in which they are embedded. And we can't talk about the social system without discussing the managerial system within which the social system is embedded. And that whole thing is boxed in by the educational system. When we talk about quality management, we talk about treating them all at once. You can't talk about any one piece without the rest.

"That," he says, "is unique."

But he is not content to explain only how TQM differs from more prevalent approaches to schooling. As he points out its distinguishing characteristics, he indicts other approaches. "The current approach to schooling," he says, "is based heavily on ideas associated with competition and ranking. People want to know how good something is relative to something else. Under TQM, the only question is: What do we do to improve?"

And this question, according to Tribus, is just as appropriately raised by a student as by a teacher or school administrator. In fact, students working in tandem with teachers who, in turn, are working with administrators and parents, will produce the best—or highest quality—education.

Prizes, rankings, standardized tests, grades, and performance evaluations are all equally abhorrent to Tribus, who advocates Deming's belief that they create competition, which is destructive. "You want a bunch of simpletons, you give simple tests," he says tartly.

But what does he suggest to replace them, beyond the TQM statistical techniques used regularly by students and school staff?

In his answer, Tribus says that measurement of quality is delimited by the type of education desired as an outcome. "The education you are trying to produce must include the four components of knowledge, know-how, wisdom, and character. If you say, we're only going to test knowledge, we're only going to benchmark against knowledge. I was a teacher for forty years, and I know now how shallow that is. If that's all you test, that's all you'll get, and the other things won't be taught. If you say, we're going to test know-how, we know how to do that. Good technical schools do that. You can give a person a task to do and see if they can do it. But then what about wisdom and what about character? Are you going to leave them out?"

Instead, he suggests that schools certify that they have taught students the four components necessary to a quality education. "If you wanted to know if the school was doing the job right, you'd invite a random sample of students from that school to take examinations anonymously, so the students aren't being judged. Those would be reviewed to see if the sample matches what the school is saying about its students.

"We don't need an independent testing agency," he notes, "but we do need an independent testing, a process, which we will compare from time to time."

How do school staff —and students— realize when quality has been attained? Tribus warns that there are no simple measures for quality. "There are, however, several measures of the *processes* of learning that indicate whether quality can be attained."

He illustrates with an example. "An exercise I urge teachers to undertake is to make a list of the things that destroy quality. Such a list is best prepared in cooperation with the learners. These items will define the things that should not be done! Then, if an effort is made to do the opposite, you will be on the road to quality."

He predicts that a typical list prepared by teachers and students together would include items such as students not doing the reading, the reading not being interesting, the teacher doing all the talking, a competitive atmosphere that makes most of the students feel inadequate, the use of external motivators such as grades, and actions that reduce self-esteem.

Tribus declares, "Staff will know they are achieving quality by observing that the students are doing their work with joy and are operating mostly on their own initiative. The teacher becomes an enabler, rather than a person who does something to someone else."

How To Begin

How should an administrator begin to implement the concepts of TQM into a school or district? Tribus says the starting point is similar for business executives anxious to change their company's method of conducting business.

"There are several things you have to do," he states. "You have to gain knowledge and you have to gain know-how.

"One of the things you could do would be to talk with some of your teachers to see if there are some who already know about it, or who are interested. Form a small group with them. I use Pareto's law, which says that the number of people who count is the square root of the number of people in the enterprise.

"If you have a school with a hundred teachers in it, find ten and meet with them informally to read and talk about this. Take turns reading and reporting on what you read, go to different seminars, and hear the different gurus."

At the end of an approximate six-month time period, Tribus says it is time to "gain know-how," which can be done by applying some of the key concepts at the classroom level. "You, the teachers, perhaps the senior students, and a consultant should do some experimenting for about a year. At the end of a year, you will have some evidence of what it means to try to run with quality. Take the results of that and discuss it with your faculty. After that discussion, it's time to go to the school board."

Tribus asserts that a presentation to the school board should not be made to gain approval for what is being done. "Assume you have approval," he says. "Tell them what you want them to do to help you improve these things you have been working on. You should have been able to do this all on your existing budget. This is how you get started, and from there it will take off."

The rationale behind the formation of the initial team is that learning is a social activity, Tribus maintains. "Learning all by yourself is very difficult," he comments. "You need to create a little social environment in which to learn. And if what you're

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learning involves a paradigm shift, you must try it out as quickly as possible. Good judgment comes from bad experience. You develop wisdom from your mistakes.

"By inviting the students, who are the customers of this education, to participate with you, you begin to achieve a paradigm shift. In industry, the paradigm shift can be explained by the fact that the workers at the bottom have brains, but it's hard for the people at the top to accept that. They believe the reason they're at the top is that they're the smartest. People at the bottom are obviously there because they're the dumbest.

"If you organize society and teach people that, they like it and it reinforces itself. You have what we have today—people at the top convinced that they're there because they're superior and the people at the bottom are there because they're inferior. Even the people at the bottom begin to believe it. It's a very bad way to view the world, but there it is.

"So I have a rule. Whenever an improvement is made, the lowest-level person who participated should tell the story of the improvement at the highest possible level in the company, so that the people at the top are hearing things that they find incredible from people they really didn't believe in before. That is part of the strategy for getting people at the top to realize that there is a lot of brainpower at the bottom."

How do team members guard against competitive urges to dominate the group? "Competition will happen," Tribus says, "and your job as administrator is to ameliorate it, not eradicate it, as best you can. That's the point at which I have a consultant come in, because the consultant begins to add the quality discipline that people don't recognize they need. The consultant will have the group decide what they are trying to do, make sure that what they say is operational, and then focus on how they will do it and how they will measure the quality of it. As people start to work on those things, the competitiveness begins to fall away."

But how do schools know a good consultant from one who is mediocre? "First of all, you have to know that this person is competent in quality management principles. You find out if they have any other customers, and you talk to those customers, asking specific things they have done. Then you have to make sure that the chemistry between you and this consultant is good."

What about the role of statistical variation, which is an integral component of TQM? Are there particular difficulties in learning and applying the key statistical concepts? Tribus believes that the basic statistical concepts are not difficult to comprehend. "We're not talking about what happens in Stat 101, or a course that educators all have to take. We're talking about something that is very, very simple. There isn't a single statistical tool that we teach that can't be learned in an hour."

> *"It takes a quality experience to create an independent learner."*

Preferring to call statistical variation "data evaluation," Tribus stresses that children can learn it easily as well. "As soon as kids are big enough to use a calculator and to know what addition, multiplication, and division stand for, they can do all the statistics that they need."

What Will Students Gain?

If TQM is adopted, Tribus says that gains for students will include a recognition that systems must be treated holistically, rather than "as individual pieces. Another concept they will learn is the whole idea of statistical variation, while another is an organized way of understanding cause and effect, always looking for causes and trying to see them in a systematic way.

"We use the word system in two senses," he adds parenthetically. "One sense is that things are systematic, meaning you have an algorithm or a way of doing things. In the other sense of the word, you consider a collection of interacting things we have isolated in our minds for study to see how they act on one another and how the actions and resulting actions all create a dynamic.

"When we say the problem is systemic," he continues, "we mean that the problem arises because of the structure or behaviors of the system in the second sense, not in the first sense. When we say, 'TQM is holistic,' we mean TQM is a system in the first sense, treating systems as a whole."

Students also learn to be analytic about their own education, Tribus maintains. "They learn to analyze what they learn and how they learn it so that the activity of learning itself is something they become good at, and becoming good at the activity of learning is an end in itself because they identify that with quality."

Tribus, who is convinced that TQM is essential to transform the present educational system, sums up its occasionally elusive philosophy in a sentence. "I heard a wonderful explanation in Japan. They said, 'You promote and reward people for individual performance; we promote and reward people for getting other people to perform well. That's the difference."

DEMING'S ORIGINAL 14 TQM POINTS*

1 Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs. 2 Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change. 3 Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place. 4 End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust. 5 Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs. 6 Institute training on the job. 7 Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers. 8 Drive out fear, so that everyone may work effectively for the company. 9 Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service. 10 Eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force. 11 A: Eliminate work standards (quotas) on the factory floor. Substitute leadership. B: Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership. 12 A: Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality. B: Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, *inter alia*, abolishment of the annual or merit rating and of management by objective. 13 Institute a vigorous program of education and self-improvement. 14 Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job.

DEMING'S POINTS MODIFIED BY STUDENTS AT MT. EDGECUMBE HIGH SCHOOL, SITKA, ALASKA

1 *Create constancy of purpose toward improvement of students and service. Aim to create the best quality students capable of improving all forms of processes and entering meaningful positions in society.* 2 *Adopt the new philosophy. Educational management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.* 3 *Work to abolish grading and the harmful effects of rating people.* 4 *Cease dependence on testing to achieve quality. Eliminate the need for inspections on a mass basis (standardized achievement tests, minimum graduation exams, etc.) by providing learning experiences which create quality performance.* 5 *Work with the educational institutions from which students come. Minimize total cost of education by improving the relationship with student sources and helping to improve the quality of students coming into your system. A single source of students coming into a system such as junior high students moving into a high school is an opportunity to build long-term relationships of loyalty and trust for the benefit of students.* 6 *Improve constantly and forever the system of student improvement and service, to improve quality and productivity.* 7 *Institute education and training on the job for students, teachers, classified staff and administrators.* 8 *Institute leadership. The aim of supervision should be to help people use machines, gadgets and materials to do a better job.* 9 *Drive out fear, so that everyone may work effectively for the school system. Create an environment which encourages people to speak freely.* 10 *Break down barriers between departments. People in teaching, special education, accounting, food service, administration, curriculum development and research must work as a team. Develop strategies for increasing the cooperation among groups and individual people.* 11 *Eliminate slogans, exhortations, and targets for teachers and students asking for perfect performance and new levels of productivity. Exhortations create adversarial relationships. The bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the control of teachers and students.* 12 *Eliminate work standards (quotas) on teachers and students (e.g., raise test scores by 10%, and lower dropouts by 15%). Substitute leadership.* 13 *Remove barriers that rob the students, teachers and management (principals, superintendents and central office support staff) of their right to pride and joy of workmanship. This means, inter alia, abolition of the annual or merit rating and of management by objective. The responsibility of all educational managers must be changed from quantity to quality.* 14 *Institute a vigorous program of education and self-improvement for everyone.* 15 *Put everybody in the school to work to accomplish the transformation. The transformation is everybody's job.*

* From Deming, W.E. (1986). *Out of the Crisis* (pp. 23-24). Cambridge, MA: MIT Center for Advanced Engineering Study.

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"Why Are We Here?"

ANNE TURNBAUGH LOCKWOOD

David Langford joined the staff at Mt. Edgecumbe High School in Sitka, Alaska, in 1985 as the school's technology teacher/coordinator. In 1988, he introduced and began to implement the concept of Total Quality Management, first within his own classes and eventually schoolwide. Students from his classes have given presentations throughout the United States, England, and Canada on changing education through quality management. Presently Langford leads his consulting firm, Langford Quality Education, which is headquartered in Billings, Montana.

Three years ago David Langford might not have shown his growing dissatisfaction with teaching—he had received various teaching awards for his work as a technology teacher at Mt. Edgecumbe High School in Sitka, Alaska. Yet a gnawing discontent with working conditions and lack of student motivation prodded him toward change, even though Mt. Edgecumbe—prior to its TQM days—was recognized in Alaska as "one of the answers to the educational problem," according to Langford.

"We had all the money that we needed to do anything we needed to do," he says in a down-to-earth, easy manner. "We hand-picked our faculty out of a thousand applications, we had a new site that we spent $22 million remodeling, and we were already being touted as one of the best schools in the state."

But the quality of work life was poor, Langford says, so poor that teachers had health problems related to stress, such as bleeding ulcers. Many dreaded coming to work in the morning. And Langford himself, who had been the lead negotiator for the teachers' union, was demoralized by a negotiation process that had dragged on for three years.

He describes the negotiation process as adversarial and destructive. "It was rendering the administration ineffective because the faculty was no longer interested in working with them. The point was to try to discredit them, to try to make them look bad so that we could look better, so that we could get a contract. In three years of negotiation, we lost 40% of the original fifteen faculty."

Applying Quality Concepts: The Beginning

Disenchanted to the point of considering a career change, Langford returned to Arizona for a visit—where he attended graduate school—and responded to a fellow teacher's invitation to meet with a senior vice president for quality at the McDonnell Douglas Corporation. "I thought I knew quite a few things," he says, "and in an hour and a half Jim Martin at McDonnell Douglas sliced me up and then started putting me together by giving me materials, books, tapes, articles, and directions. He said, 'Don't quit the system; go back and make a change. Here's how you can do it.'"

Although Martin stressed that he did not know how to apply quality improvement concepts to education, Langford felt renewed by the encounter, and began studying and contacting corporate people nationwide who had been active in the quality movement.

"Everyone kept telling me that the process has to start from the top, that you have to get the top involved," he says. But when he initially tried to interest the school's administration, he says they weren't interested.

Reluctant to give up, Langford shifted his thinking. "I decided that perhaps I was at the top of something, such as my own classroom. If I was really going to make a difference, what I needed to do was start managing my classroom in a whole different way."

He started on a small scale, choosing one of his best classes. "Every day I would ask questions like, 'Why are we here?' The kids would say, 'To get good grades,' 'Because so-and-so made me,' those kinds of answers."

Discussions about the purpose of education continued for some time as Langford explained Deming's fourteen points to the class. "I asked if they would be interested in helping me understand and work through this process, because I didn't think that the way I was teaching and the way we were operating were the most effective. The only way I knew to change would be to manage things differently with their help."

And he was persistent in his approach to change. "Every day I'd ask, 'What have you learned?' Very quickly we started defining the system of education, and then we started thinking about what we needed to study about the system."

"Why Are We Here?"

To acquaint students with some of the statistical tools and techniques of TQM, Langford sent the seven members of the class out on a mission to collect information about their fellow students and other teachers.

"They randomly selected classes and collected information that we analyzed. We looked at how many minutes

were spent listening to lectures versus participating in hands-on activities, what percentage of students were late, how many kids were sleeping in class per day. Before we had always looked at individuals and we were only concerned with individual performance. Now, my students started counting the number of people per classroom, and that allowed us to begin to think systematically."

Meanwhile, Langford continued the dialogue about educational purpose with his students and decided to stop assigning them grades. "I told them that Deming says grades take away from intrinsic motivation. The only way I knew to get out of a grading environment while we were still *in* a grading environment was to give everyone 'A's'. They asked, 'If we don't do anything we still get an 'A'?', and I took a little hop of faith and said yes."

Langford also told students that they did not have to attend class and they would still receive 'A's'. Inexorably, he then led his somewhat incredulous class back to the question: "Why are we here?"

As students became more skilled at studying the educational system around them, they raised money to visit the McDonnell Douglas Corporation as well as several other corporations that were using quality improvement concepts, including Motorola, which had won the Malcolm Baldridge Award the previous year.

Langford explains, "The corporate people rolled out the red carpet and did a great job explaining what they were doing. The kids came back and did a presentation for the whole school in which they explained what they had learned." The superintendent, impressed by the students' level of commitment and independence, became a believer in the quality movement.

"At that point," Langford recalls, "we started training for all faculty." At the end of the training, a unanimous faculty vote secured additional training, although the initial training was mandatory.

Langford reflects that he would not make training in quality management mandatory if he were instituting change now. "I also wouldn't call it TQM. If we're into quality management now, what were we doing before? Was that poor quality management? We were doing the very best job that we knew how to do at the time, but here are a whole new set of things that will help us do an even better job."

> *"I also wouldn't call it TQM. If we're into quality management now, what were we doing before? Was that poor quality management?"*

Expectations and Results

Langford says that his expectations prior to initiating work in quality improvement were shattered by the results. "I expected to see higher test scores, and I expected that the kids would follow directions better and work more on the things we wanted them to do. What we got was something totally different."

He adds candidly, "I wasn't able to cope with it for a long time."

Implementing the concepts of the quality movement resulted in a much more independent student, he claims. "We got students who wanted to take the responsibility themselves, not only for the learning but also for planning it, directing it, and moving through it. They were able to come into new situations and assess them, look at situations and assess what needed to be done, make changes, learn to use the graphical charts, and so on. They became very good at giving presentations, learning to persuade other people and change ideas.

"Suddenly we had a new kind of student who was looking five, ten, fifteen, even twenty-five years ahead. Before, I hardly had a student who could look past this Friday's dance. Now we had people making plans for themselves and the state and their relationship to that. They were seeing the interdependent role that they play. This was exactly what all the corporations I talked to were saying that they needed in employees."

No More Tests—and Why

Testing, ranking, and grades remain anathema to Langford, who maintains that test scores are basically meaningless within the quality movement schema. "Test scores don't test the things that this kind of a process fosters, such as intrinsic motivation, drive, vision, purpose of life and organization."

He remembers that prior to schoolwide initiation of TQM concepts, grades and tests were used always in a limited context, such as how students performed compared to their performance the previous year. "That's what Deming calls driving your car by looking through the rearview mirror," he comments wryly. "We couldn't see testing as a process, nor could we see the problems we were dealing with as anything except isolated situations. We didn't understand the interrelation of things to the whole system, that when you change one factor that single change affects everything else."

He recollects early attempts to achieve quality that, while well-

intentioned, were ineffective. "At the beginning, we started attacking all the normal things that usually plague schools, trying to remove what is bad in an organization. We tried to remove tardies and discipline problems. But the real power of the movement is not in working to get rid of what is bad but in learning how to measure, promote, train, and work towards what is good."

Total Quality Learning

Langford sketches an example to illustrate what he means. "We worked on the tardiness problem for a long time and got it to a very low rate, but one of the root causes of student tardiness was that the classes were boring.

"You can get your tardiness rate where you want it to be, but you still haven't done a thing to change the root problem, which is the learning process itself and how that functions. It's really in the last couple of years that we recognized, as a system, that if we have a tardiness problem, it's not because of the individual. It's the system, and what we need to do is study why students would want to be tardy. That's when I coined the phrase 'total quality learning.' What you try to do is turn the whole organization into a learning organization through constant experimentation and study of what you have done."

And dramatic results, he says, can only come from involving the people who are doing the work. "A lot of educators think that those people are teachers. I look at teachers as middle management. The people doing the work are the students. Unless you start involving them in the management planning, analysis, and change process within the classroom, everything that you do is going to be teacher or administrator-directed, and you're back in the old system of telling people what to do."

Constancy of purpose is a creed that Langford adheres to rigorously. "You must develop constancy of purpose. Why are you in this class? Why are we learning this information? How is it going to benefit me? We call it 'Station WIFM—What's In It For Me,' and constantly return to that, so that students see a relationship between the work that they're doing and their future."

Langford returns to his point about difficulties independent, self-motivated students can present to teachers accustomed to a more authoritarian role. "As a master teacher, I was rated on how well I controlled the classroom, how well I put down discipline problems, how well I could keep kids out of the principal's office, how well I garnered resources, used them and built my program. I was not rated on understanding systems, on realizing that building my program might be achieved at the expense of all other programs."

Langford uses his own experience to predict problematic areas for teachers. "It's going to be difficult," he foresees, "for teachers to suddenly assume these concepts and then continue to be managed in a system that fosters the opposite.

"That's why it's critical that the whole system understands the concepts. I did it from sheer force of will, and started without the blessing of administration. A lot of teachers that I'm working with across the country have a significant advantage. They already have superintendents and principals who are giving them license to experiment and change. They don't always know what that means, nor are they prepared to manage the situation that might be evolving, but at least they know enough to know that they need to be doing something different."

How does he respond to critics who might like the basic concepts of TQM but who argue that there is a need for some kind of assessment of student achievement apart from the statistical tools of TQM for the purpose of accountability?

Langford pounces on the word "accountability," saying, "Accountability is just a fancy word for blame. You're trying to find out who you're going to blame. Once you get over that hurdle, you start to say, 'There's nobody to blame; the system is giving us a certain level of performance.'"

However, school staff can learn from the system's level of performance, Langford believes. "What can we learn about that level of performance? How can we move the average level of performance up and at the same time shrink the variation? You have to understand a little about the theory of variation and how that applies."

More than the tools and techniques of TQM, however, Langford explains the quality movement as a different way of viewing the world. "It's a way of thinking about what you're doing and how you do it. It's a willingness to exceed expectations of those that you work with."

He admits that the process is simplified by a thorough understanding of the tools and techniques. "And the more you understand the interaction of people in teams and groups, the more successful you're going to be."

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RESEARCH AND THE CLASSROOM

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Is TQM For Everybody?

ANNE TURNBAUGH LOCKWOOD

Theresa M. Hicks, a second-grade teacher at Denver Place Elementary School, Wilmington, Ohio, is passionately committed to the principles of W. Edwards Deming and the Total Quality Management movement. For the past two years she has worked to implement the central concepts in her classroom, first with third graders and, this past academic year, with second graders. In 1992 she was the recipient of a $10,000 research grant from W. Edwards Deming. In this article, she describes how she began to implement the quality movement's concepts in her classroom and the manner in which students responded.

Long before Theresa Hicks knew about any of the theoretical and philosophical concepts of W. Edwards Deming and what is now called Total Quality Management, she was committed to teaching in a manner that placed students squarely at the center of their own education. She also fiercely believed that students should not be ranked, sorted, separated, or classified—and rejected a conventional teaching role for herself as sole content authority and dispenser of knowledge.

Originally educated in horticulture, Hicks became aware of her rapport with children while she was operating a retail nursery. As she puts it, "I kept finding so much pleasure in trying to relate to kids that I decided to change my career altogether."

After receiving a master's degree in education, she began teaching in a classroom for children who had been categorized as learning disabled, grades one through six.

That first teaching experience confirmed her instinctive approach toward working with children. "The more I got to know the kids, the more I realized that it didn't matter what grade they were in," she explains, "and it didn't matter if they were classifed as learning disabled or if they had severe disabilities. They were the same as other kids who had sought me out when I was working in retail. They were just kids. I didn't like the fact that I had to classify them and put them into special categories."

In addition, Hicks felt tension between the way she had been taught to teach and the way she wanted to teach. "A lot of the things I was taught in terms of setting up my classroom structure and basic teaching methods didn't seem human. It didn't seem to me that I would relate to the kids as well as I would if I could just be myself."

As she began to read and study more widely, she found affirmation for her intuitive beliefs about education. "I found that learning is not just something that takes place in the classroom. It's a part of life. I became more and more interested in trying to make my material have some meaning when they went home, some sort of carryover into their lives."

Without realizing it, Hicks's first step toward a TQM classroom was to reconceptualize her own role. "I started to see that I could break down barriers and remove myself from an authority position to a position where the students would be co-teachers with me." She adds, "I wanted to be a facilitator and coach."

Out of the Crisis

At the point where Hicks was reframing her teaching role and approach to the learning process, she began to read Deming's work. It had profound personal meaning for her.

She remembers, "Deming says that kids start out with great self-esteem, but through all the things we have in elementary school—the gold stars, the stickers, the rankings, the ways that teachers subjectively give prizes or punishments, the consequences that are positive or negative—their motivation to learn is slowly ripped away. Eventually students will end up as workers in our society who do not want to learn something new."

That realization, Hicks claims, was an epiphany for her. "At that point I said, 'The buck stops with me.' If I believe what Dr. Deming is saying, and if I gather evidence as to how it has worked in Japan and for other companies, I must take faith in that evidence and believe it can work to change education. And if I can't wait for my system to agree with me, then I have to do something about it in my classroom."

First Steps Toward Quality

Fascinated by her own reading of Deming's classic, *Out of the Crisis*, she brought the book with her into her third grade classroom. "I brought it as a personal reference, more than as something I would teach the kids," she recalls.

But her enthusiasm about what she read prompted her to select concepts and consider how they might work in her classroom. She began with Deming's equilateral triangle about quality. As she explains it, "At the top of the triangle is the product. The left-hand corner of the triangle represents how the customer is trained to use the product, and the right-hand corner represents how the customer *actually* uses the product. All of that has to come together to make a perfect triangle or you won't have quality."

She remembers the moment she began a discussion about quality. Walking to the board, she told the students about Deming's triangle and facilitated a lively discussion about the relationship of the triangle's concepts

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to companies. "I had a sharp group of kids," Hicks says, "and after I asked how they saw the triangle working for us in our classroom, they told me that they saw what I taught them as the product."

That first year, Hicks limited the amount of quality concepts that she introduced into her classroom, although she attests that her students "bought into it all the way." Assigned to second grade the following year, she admits that she was uneasy about continuing to implement quality concepts. "I was absolutely terrified," she says, "because I was sold that this was the way to go, but I wondered how I could possibly do it with little kids."

Her approach was to tell the class at the beginning of the year that she was working with Deming, a contact that she had initiated. "I told them that he was trying to teach me about what was going on in industry that was positive. I said that I would be working with the students to share some ideas and to get their ideas throughout the year."

She decided to give grades only when absolutely compelled, and to administer tests solely to diagnose weaknesses in her own teaching. "If I gave a test, its purpose was to try to look at myself, how I could improve my teaching."

Part of her apprehension about introducing concepts from the quality movement into her second grade classroom stemmed from her belief that second graders were already committed to the system that ranked them. "Seven-year-olds are used to stickers, certificates, reading groups, everything that I don't do or that I don't like doing, such as ranking and separating the kids."

To illustrate some of the quality movement's key concepts, Hicks told the class she wanted to show them how to record numbers or information on a graph. She suggested that two students play jacks while the others watched. "I told them the purpose was to give us information, not to compete."

After showing the class how the two scores could be recorded onto a piece of chart paper, she demonstrated to them how the chart could be used. "I told them they would see it as a picture, and we could put it up on the wall and think about it. We could talk about it as a group, much as we would if we were an art class looking at pictures."

Her class was enthusiastic. "Two of the kids brought in their own jacks and balls. I had them stand up in front of the group and start taking turns. I plotted it, explaining to the kids what would go on the horizontal axis and what would go on the vertical axis. I said that these charts are things that their parents probably saw all the time in their companies."

After the two students had played for ten bounces of the ball, Hicks stopped the game and asked the class to concentrate on the chart that recorded the data from the game. "I told them that if I were going to hire somebody to represent my company, and if my company produced jacks, we would be selling the toy or trying to convince people to play more jacks. I asked which student the class thought I would want to hire."

Predictably, the class chose the child with the higher score. Hicks then asked the class if they believed she had enough information to judge.

"I asked if they thought I was really basing my decision to hire on some subjective reason, such as stopping at ten drops or thirteen drops of the ball. Who's to say that it's right for me to judge even at twenty drops of the ball who I would want to hire?"

The two children picked up the

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game again and not surprisingly, the other child began to do better. At another, arbitrary count of bounces of the ball, Hicks stopped the game for the second time.

"I said, let's stop right here and talk about this. If I had hired this one boy to represent my company, I would have been suboptimizing my chances with this other child because he was equally as good. He could have had other skills that would have enabled him to represent my corporation better than the other child. I asked: 'Did I have enough information to hire anybody?'"

She encouraged the class to think about how this might relate to them in the second grade. "The kids replied that the scores on jacks were similar to how they might do on a test on a given day, that there might be a reason outside of their control that caused them to do well or very poorly. There could be some reason outside of their control altogether that caused me to judge them."

Hicks explained to the class that the same reasons could apply to her as well. "If I happened to be in a really bad mood someday, I could choose to manipulate the standards by which I would judge a child. I explained that I had two things for us to look at: their actual performance and the variations in it, plus my standards and the variation in my standards.

"That," she says with satisfaction, "got us into a discussion of common and special causes of variation."

Barriers to TQM

Such a sophisticated discussion of variation may seem amazing at the second grade level, but Hicks is not surprised that it took place. What distresses her, however, is her position as a soloist within her school and district—the only teacher applying TQM concepts.

Since the concepts central to the quality movement require thinking about systems, how does she function by herself? In her answer, she differentiates between interactions she has with the children in her classroom, and interactions with teachers at the building level.

"At the classroom level it is extremely successful," she says, "and the children are free to learn, have a good time, and share with each other. I explain that I'm there as a coach to try and help things along. I am hired to make sure that they learn what I teach them and that they teach each other properly, but I'm also hired to be sure that everyone in the room is safe and happy."

Safety and happiness in the classroom translate into rules of mutual respect and equity that Hicks will enforce if necessary. "I tell the kids that if they ever feel that their freedom or happiness is in jeopardy they need to come to me because I am the person in charge. I am the one who can listen and hear both sides of the story and then make a judgment."

She is quick to point out that children must be free of fear. "They have to feel that the barrier is broken down to where they *can* come to me."

Although she reports that her classroom experience with TQM has been nothing less than positive, operating as a soloist does present its own, special sorts of problems. Hicks describes it as "difficult," but points to support that she receives from prominent figures in the quality movement. "I have had tremendous support from Dr. Deming and Myron Tribus. I sought people out, the people that have skills. I would ask if they thought I was on the right track. I would explain that I was working at a second-grade level and they would give me feedback."

The feedback has shaped her philosophy, Hicks says, but the support she received did not extend to her building. "Teachers were absolutely appalled that I was teaching things outside of what is typically thought to be second grade. They would say, 'You're not supposed to be teaching vocational skills to regular mainstreamed kids.'"

Her peers frequently construe what she teaches as vocational, Hicks explains, and place other restrictions upon content as well. "I received all kinds of flak about teaching upper-level math, about teaching fauna.

"Teachers would say, 'You're supposed to teach about dinosaurs, not fauna.' They thought what I was doing was too hard for the kids. So I wondered what I was doing that was wrong."

But now she reassures herself. "If it's not in the textbook that doesn't mean it's wrong," she says. "I told myself not to talk about it as much, and we coexist peacefully."

Why TQM?

But how much of Hick's success is truly related to the concepts of the quality movement, and how much is connected to her innate ability as a teacher? Hicks admits that her basic attitude toward teaching would be the same, "whether I'm involved with Deming's work or something else. I am constantly looking for what research is telling me, and I'm constantly looking at myself as a lifelong learner." She adds somewhat plaintively, "I'm finding that not everybody is like that."

But TQM, she maintains, gives her a discipline to apply to her activities. "It gives me a pathway to follow and keeps me directed in the mode of continuous improvement. It has redirected and structured me so that I realize that you must adopt something logically, you must do it through data and analysis."

It has also helped remove her own fear of making mistakes. "I'm not afraid to say I really messed up. I can go back and look at what was positive and what was negative and then try to improve the negative points. Because of that, I'm not wasting as much time."

Given her personal commitment to applying TQM concepts to education, what does Hicks believe is needed to make TQM work systemwide? Her answer comes without hesitation.

"A lot of work," she replies. "It takes true commitment. The first thing that has to take place is breaking down the barriers between people, eliminating whatever is standing between two people or two groups or two levels within the system. You must break that down, talk about it, and rework it so those barriers don't exist anymore. After you break down the barriers, you really must educate everybody as to what's going on and what was learned, day to day."

Are some teachers more amenable to implementing TQM concepts than others? Hicks's answer is surprising. She says thoughtfully, "The more creative a teacher is, the more likely it is that she will not hear the whole message. Frequently teachers like a project that I've done, but they don't want to hear about understanding and appreciating a system. They want to hear about the hands-on kinds of things. If they finally do listen, they may realize that it is a creative way to run a classroom, so they will listen to that part. But then comes statistics."

School staff frequently balk at the statistical component of TQM, she comments. "If teachers buy into all the other parts, they don't want to buy the statistical part." Or, conversely, some teachers like the statistical tools and techniques, but resist systems thinking.

Although Hicks realizes that the road to full implementation of TQM will not be smooth, her personal commitment to its key concepts has not wavered. She explains that she sees TQM as an inclusive movement, one that ideally must involve everyone in a district at all levels. "TQM should not be saved for the gifted, and it should not be reserved for the kids who are disabled or dysfunctional. TQM is for everybody."

Additional Reading on TQM

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COMMENTARY

RICHARD A. ROSSMILLER

Total Quality Management, or TQM, has rapidly become one of the current buzzwords in educational circles. Unfortunately, it appears that very few educators have more than a superficial understanding of the philosophy, concepts or processes that are embodied in TQM. Some view TQM as the yellow brick road to Utopia and others view it as the road to Hades. Here in Madison, for example, a recommendation by a broadly based planning committee that the local public school system adopt TQM was immediately attacked by teacher union representatives as a nefarious plot to undermine the collective bargaining process.

During the last half of this century the confluence of several trends has fundamentally altered the organization and operation of public schools in America. Reorganization and consolidation of school districts led to more centralization and larger central office bureaucracies; the need to achieve greater racial balance and to provide for students with special needs involved the courts in the day-to-day aspects of school operation more heavily than ever before; the increasing reliance on state funding to both reduce reliance on property taxes and reduce disparities in funding led directly to more rules, regulations and mandates; and the emergence of collective bargaining and strong teacher unions changed the working relationships of teachers and administrators. All of these forces tended to divert attention away from the fundamental building blocks of any educational system: its classrooms and schools. Today we are beginning to realize once again that educational reform cannot be accomplished by mandates alone—that if lasting change is to occur, it must involve fundamental changes in the culture of schools. We see a curious mix of policy initiatives that would, on the one hand, decentralize education by assigning much more authority and responsibility to individual schools and, on the other hand, centralize education by imposing a national curriculum and mandatory testing.

Total Quality Management very clearly favors decentralizing because it explicitly rejects standardized tests and performance evaluations of individual students and emphasizes a team approach in which *all* school personnel—teachers, administrators, counselors, secretaries, cooks, custodians and even bus drivers—focus on creating a school environment in which students enjoy learning and become autonomous learners. To understand and appreciate TQM, it may best be viewed as a philosophy of management that rejects a hierarchical or "top-down" approach in favor of an approach in which all participants can and do contribute to enhancing the quality of the learning community. As David Langford observes, TQM recognizes that students are the workers and that teachers are really managers because they must decide how to use the resources available—time, instructional materials and their own knowledge, know-how, wisdom and character to help a group of students with diverse talents, interests and skills become active, engaged autonomous learners.

Another important contribution of TQM is the recognition that, in many cases, it is the system itself that is at fault, not the teacher, the principal or the students. Langford's comments about accountability are appropriate, i.e., that accountability "is just a fancy word for blame," and that often there is no one to blame because the system as it is currently configured is only capable of producing a certain level of performance.

Our experience with TQM here at the National Center for Effective Schools leads us to be enthusiastic about its potential to help schools become more effective. The five school districts that comprise the Wisconsin Consortium have used the Effective Schools process together with Outcome-Based Education and Total Quality Management to guide their school improvement efforts for more than three years and are beginning to show some impressive results. The Center's Effective Schools process provided a template which guided these districts as they worked with their staffs to develop the conflict resolution, communication, decision-making and leadership skills that are so essential to successful site-based management. Total Quality Management provided both a philosophy of management that complements the Effective Schools process and a set of tools and procedures that are helpful in identifying problem areas and testing solutions—the Plan, Do, Check, Act cycle. We have incorporated several aspects of TQM into our School-Based Instructional Leadership program and have prepared a paper that is available upon request, "The Effective Schools Process for Continuous School Improvement," which shows the interrelationships between and among the Effective Schools process, Outcome-Based Education and Total Quality Management.

The potential TQM holds for transforming our schools into institutions where continuous improvement is the norm is nicely captured by Myron Tribus in his recounting of the statement made to him in Japan: "You promote and reward people for individual performance; we promote and reward people for getting other people to perform well." That is, after all, the acid test of leadership!

PUBLICATIONS

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